

## Human consumption of land snails in Israel

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Molluscs have served as human food since man's very existence. Bryant & Williams-Dean (1975) examined a large sample of human coprolites (fossil faeces) from a stratum at Terra Amata in the French Mediterranean which probably represents *Homo erectus* of some 300,000 years ago, and found fragments of mollusc shells. Such human coprolites from as early as the Middle Palaeolithic period contain shell fragments of land snails.

If the shells are found in large numbers at ancient sites of human dwelling, and are scarred or broken in a more or less uniform way, then they may well be considered to be the remnants of meals. In addition, such shells are often characterized by their uneroded sculpture which indicates that they were collected before the usual wear took place (Ant, 1971).

Prehistoric evidence from the Near East is abundant and widely dispersed. Various species of *Helix* and *Levantina* have been consumed since the late Pleistocene in northern Iraq (Braidwood & Reed, 1957; Braidwood & Howe, 1960), western Iran and North Africa (Reed, 1962). Van Regeren Altena (1962) mentions a great many shells of *Helix pachya* Bgt. from the deposits of a Middle Palaeolithic rock shelter at Ksar'Akil in the Antelias Valley in Lebanon.

In Israel, too, shells of large land snails have been a regular feature of prehistoric excavations. *Levantina caesareana* (Mousson) was found in the Upper Palaeolithic cave of Djebel Kafzeh, south of Nazareth, in the Natufian deposits of Shuqba in Wadi el-Natuf, east of Lod (Garrod, 1942), and in all layers of the Natufian and the Kebaran in Hayonim cave in Western Galilee (Bar-Yosef & Tchernov, 1966). The closely related *Levantina bierosolyma* (Mousson) has been found in the Upper Palaeolithic cave of Erq el-Ahmar in Wadi Haritun near Bethlehem, in the Natufian caves of Mugharet ez-Zuitina in Wadi Djihar and of Tor Abu Sif near Bethlehem (Neuville, 1951). Finally, *Helix cavata* Mousson was found in a Kebaran site near Ein Gev (Stekelis, Bar-Yosef & Tchernov,

1966) and, in small numbers, in a few of the layers (Natufian and Lower Assemblage of the Kebaran) of Hayonim cave (Bar-Yosef & Tchernov, 1966).

As to the manner of preparation, we get an idea from the fact that the numerous shells of *Levantina caesareana* in Hayonim cave were almost all broken and charred (Bar-Yosef & Tchernov, 1966). The animals might, therefore, have been roasted on the rocks or, as Falkner (1967) suggested, in the ashes. On the other hand, the shells at many sites are intact and uncharred, pointing (according to Reed, 1962) to the habit of killing the animals prior to extraction as they cannot be removed alive from their shells. In fact, there is a very simple way of removing the live animal from the intact shell: by immersing the air-breathing snail in water which will soon make it leave the shell and extend its body fully. A light pull will then suffice to detach the animal from its shell.

Land snail consumption continued during the Bronze Age. Biggs (1960) mentions *Helix* and *Levantina* from the Neolithic and the Early and Middle Bronze Age layers of Jericho at Tel el-Sultan. Neuville (1951) found *Levantina biersolyma* in a Middle Bronze Age cave in Wadi et-Tin near Bet Sahur west of Jerusalem. *Helix cavata*, sparsely represented in prehistoric deposits, appears abundantly in those of the Late Bronze period, south of Lake Tiberias at the eastern side of the Jordan opposite Deganiya (Avnimelech, 1937).

From the Roman period Avnimelech (1937) mentions *Helix cavata* in large numbers at the previously mentioned site in the Jordan Valley. The Romans themselves ate large quantities of land snails and even cultivated them as an agricultural product, as described by Pliny and Varro. They were also among the first transporters of land snails throughout the areas of their conquests, as testified by *Helix pomatia* L., 'the Roman Snail' in England, and by the many shells of *Helix pomatia* and *Helix aspersa* Müll. in excavations of Roman settlements in Germany and England (Ant, 1971; Ellis, 1969).

Since then Christians in Palestine have probably continued the tradition, reinforced by European monks and Christian travellers. It is small wonder that for many centuries the consumption of snails was uncommon in this country and, if existent at all, not given publicity. Among Jews, Moslems and Druze, snails are forbidden food according to their dietary laws. Among the Jews, all invertebrates — with the exception of some Orthoptera — are forbidden, in accordance with the prohibition against "whatever goeth upon the belly" (Leviticus 11:12). In Kafr Yasif and in other villages in Western Galilee, many Christians eat snails today, but do not usually discuss the subject in public being embarrassed by the fact that snails are considered "unclean" by their fellow Moslem and Druze villagers (Mr. Said Brik, personal communication).

From the Byzantine period, when Christianity gradually became the majority religion, Avnimelech (1938) mentions numerous shells of *Levantina caesareana* in the kitchen debris of a Greek convent from the 6th century in Jerusalem. It is noteworthy that this species is not found there locally as it is replaced by *Levantina biersolyma* and must, therefore, have been brought to the kitchen from another, nearby, region, probably Ramalla or Lod. A similar case is known from Cyprus. *Levantina spiriplana spiriplana* (Olivier) is here known only from the isolated Hagios Andronikos monastery and was probably introduced by monks from the Aegean region where the snail has been favoured as food up to the present day (Pfeiffer, 1949).

Concerning the 1300 years of Moslem rule in this country, we have no information. As the dietary laws of the Islam prohibit the consumption of snails, this is obviously no

coincidence. But it does seem strange that so far no shells have been found in Crusader settlements. These, after all, were European dwellings, the inhabitants of which were used to this type of food, especially in such countries where, during the Middle Ages, the larger land snails became a popular substitute for meat on Fridays and during Lent. Floericke (1920) even mentions the revival of snail cultivation in special pens at early large monasteries in northern Germany. At any rate, the well-established tradition of land snail consumption among Christian Arabs in Israel cannot easily be explained unless rooted in remote Roman-Christian times.

In modern times, Tristram (1865) mentions *Helix aspersa*, *Helix cavata*, and *Levantina caesareana* being collected and sold in the markets for food. *Levantina bierosolyma* was, at least until 1948, commonly sold in the market of the Old City of Jerusalem (Avnimelech, 1938; Bodenheimer & Dor, 1956). A Catholic nun of Shefar'am told the present author that some fifteen years ago Bedouin and village women used to collect *Theba pisana* (Müll.) near the coast during the summer and sell them in the village streets. This food was not particularly favoured but rather considered a cheap protein substitute for meat and eggs which the poor could not often afford. The same situation is known in Crete (Boekschoten, 1962) and in England at the beginning of this century (Swanton, 1912). As the standard of living rises, the food value of snails declines, especially as collection and preparation are time-consuming.

In Western Galilee today, the following land snail species are eaten by part of the Christian inhabitants, mainly in the villages: *Helix cavata*, *Helix aspersa*, *Levantina caesareana*, and *Theba pisana*. The consumers are connoisseurs who consider the snails a seasonal treat; the occasional traders are children and poor women. Thus, *Theba pisana*, exclusively eaten during the summer when they aestivate and are, therefore, "pure" — are collected along the coast and sold cheaply in the village markets or in Akko. My wife observed an old woman selling *Theba pisana* from a little tin during the summer of 1972 in the Thursday morning market at Kafir Yasif. It is also eaten in Shefar'am and in the Christian village of Mi'iliya. A Christian taxi driver from Nazareth told the author enthusiastically that *Theba pisana* is the tastiest of all snails and that he prefers it to any meat. Towards the end of the summer it is sometimes sold by women in the streets of Nazareth for the price of IL 0.70 per cup. He also informed me that there is considerable demand for *Theba pisana* in Haifa, where it is occasionally sold in the market of Wadi Nisnas.

The taste of the snails depends on the food plants eaten by the animals, aromatic herbs being considered best (Floericke, 1920). Mr. Michael Kena'an of Rosh Haniqra (personal communication) claims that *Theba pisana* collected from *Inula* plants, has the worst taste of all. It is at the end of summer, therefore, when the snails emerge from dormancy and start to eat greedily, that they are collected, starved for a few days and then fed bread, cucumber peel and other vegetable waste to fatten them. As to the manner of preparation, *Theba pisana* is simply put into boiling water to make the animals come out of the shells, salt being added to hasten the effect. The water is changed several times until all dirt has been removed, and the snails are then cooked with spices like onion and garlic. The consumption of *Theba pisana* is widespread in the Mediterranean area. In France, Italy, and Algeria it is regularly brought to the market, and it is used as food although it is said to have a sour aftertaste. At the Marseilles market it used to be sold at a rate of three francs per fifty kilograms (Taylor, 1912).

*Helix cavata* aestivates while buried in the soil. In autumn, after the first rains, the animals appear en masse above the ground, copulate, lay eggs and feed voraciously. Thus the only time they can be easily collected, is during copulation when the animals are rather underfed. In Nazareth I was told that only few people eat them as they are not very tasty in this condition. After collection they are starved for a day or two and then fattened by feeding them vegetables. In Shefar'am, two independent witnesses testified that *Helix cavata* is never eaten.

At this point we should consider a question concerning the frequency of *Helix* shells in prehistoric excavations. Reed (1962) notes the steady increase in numbers of *Helix* in prehistoric sites since the late Pleistocene throughout the Middle East, and the sudden, almost total, disappearance from the archaeological record some 7.000 years ago. He relates the appearance and increase of these snails in archaeological layers to the increased use of these animals as food by a steadily-growing population, but was unable to explain their sudden disappearance by means of changing food preferences. Bar-Yosef & Tchernov (1966) noticed that *Helix cavata* was found only in a few layers of Hayonim cave, while the shells of *Levantina caesareana* are present in all layers. The explanation offered is that it is difficult to collect *Helix cavata* because it buries deep into the ground during the summer. This author would like to suggest an additional explanation: if humans do eat *Helix*, they will collect the animals in large numbers for a few days only each year during the height of the breeding season. In this way reproduction will be seriously limited and the snails may locally approach extinction. Ant (1971) gives an illustrative example by pointing to the fact that *Helix pomatia* is practically extinct in the vicinity of some European universities which in the past used them for study purposes. In some European countries nature protection laws have recently been passed which limit or prohibit the collection of *Helix pomatia*. Urbanski (1970) mentions the alarming decrease in the numbers of some *Helix* species in eastern Europe, not only as a result of increased demand in some western European countries, but mainly because the modern food industry is now prepared to accept snails during the main breeding season in the spring. Formerly, when hygiene was less well maintained, people would not accept snails without epiphragma.

Let us finally turn to the consumption of *Levantina caesareana* in Western Galilee today. From all that has been said above, it follows that in our region this is the most satisfactory edible snail species. Being a rock dweller, it can be found at all times in cracks and crevices of limestone and dolomite rocks. It is never found in large numbers and collection is difficult; and so it does not pay to collect them for commercial purposes. It is precisely the fact that *Levantina* can be found throughout the year, which allows collection when it is at its fattest and tastiest, in spring at the end of winter activity. By this time breeding and egg laying are long over. The author has collected evidence that *Levantina* is eaten by the Christian inhabitants of Hurfeish, Nazareth, Shefar'am, Judeida, Mi'iliya and according to Mr. Michael Kena'an also in Rosh Haniqra. There are several ways of preparation. Mr. Shuqri Aref from Mi'iliya informed me that snails, after collection by children, are kept in a box with sand or flour and thus made to fast for three days or more. They are then covered with table salt and mashed so that bubbles are formed. After washing, they are cooked and left to simmer until they can be picked up with a needle. Onions, cinnamon, salt and hot peppers are added. Some eat them with tehina and garlic. An alternative way of preparation is by roasting the shells on charcoal,

whereupon they are picked up with a needle and eaten without any further additions. Mr. Kena'an also lets the animals fast for a few days and then feeds them fine bran, i.e., the husks of grain separated from the flour after grinding. Mr. Sammi Assad Michael from Shefar'am told me that in his village *Levantina* is similarly treated but finally baked in the oven together with tehina and various spices, to be served as a snack with arak.

This review would be incomplete without at least mentioning the consumption of *Helix aspersa*, said to be the tastiest snail of all. This Mediterranean snail does not belong to the fauna of Israel and was apparently introduced by man. It is now found in small isolated colonies in gardens along the coast of Western Galilee and in Haifa (Bar, 1976).

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